

The Economic Consequences of Financial Misreporting: Evidence from Employee Responses

ABSTRACT

This study investigates the economic consequences of financial misreporting arising from employee responses. Specifically, we examine two employee reactions: (1) withdrawing their human capital and (2) reducing holding of employer stock, in both misreporting period and post-restatement period. We find an increase in employee turnover and a decrease in employee holding of employer stock in the post-restatement period (restatement effect) and some evidence that employees start to react in the period of misreporting (misreporting effect). We also find some evidence that the misreporting effect varies with employee tenure in the misreporting period and the restatement effect varies with the severity of misreporting in the post-restatement period. We further show that our results are not driven by labor demand, increased likelihood of executive turnover, declining stock prices, and internal control weakness disclosures, and are robust to a matched sample estimation. Overall, our study provides evidence of human capital costs of financial misreporting to misreporting firms, shedding new light on the negative consequences of accounting failures.

JEL Classification: M41; M55; J33; J63

Keywords: Financial misreporting; employee responses; employee turnover; employee holding of employer stock

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1. Introduction

Accounting information is used by a variety of stakeholders for decision making, and failure to report appropriately has significant negative consequences. A number of studies find that revelations of accounting problems trigger serious adverse responses from shareholders, debtholders, regulatory and law enforcement agencies, and managerial labor market (e.g., Anderson and Yohn 2002; Graham, Li, and Qiu 2008; Karpoff, Lee, and Martin 2008a; Desai, Hogan, and Wilkins 2006). Employees, on the other hand, are critical stakeholders who tie up their human capital with the firm. Anecdotal evidence from cases like Enron and WorldCom illustrates that employees suffer substantial losses from accounting improprieties of their employers such as losing their jobs and retirement wealth. Yet, little research has examined employees' responses to firm financial misreporting.

This study attempts to fill the void by investigating whether employees react to financial misreporting by withdrawing their human capital and decreasing holding of employer stock in their retirement plans. Employees voluntarily make costly investment in firm-specific human capital. If employees become reluctant to do so, they will leave the firm, which makes the firm experience an observable higher turnover rate. Employee turnover proves to be costly to a firm. According to the Society for Human Resource Management,¹ turnover costs are estimated to be roughly 150% of the base salary of replaced employees.² In addition, David and Brachet (2011) find that labor turnover plays a more significant role in organizational forgetting (i.e., the

¹ Society for Human Resource Management is a professional human resources membership association, aiming at promoting the role of human resources as a profession.

² See <https://cnmsocal.org/featured/true-cost-of-employee-turnover/>. Turnover costs include (but are not limited to) (1) cost of searching and hiring (advertising, interviewing, hiring), (2) cost of onboarding a new person (training, management time), and (3) lost productivity.

depreciation of organizational knowledge) than skill depreciation, impairing firms' capabilities and competitiveness. Similarly, reduced employee holding of employer stock is also costly to the firm. Prior studies find that employee holding of company stock can benefit the company in certain ways such as increasing employee motivation and productivity (Kruse and Blasi 1995) and placing the stock in friendly hands as a form of takeover defense (Rauh 2006). Thus, studying the outcomes of financial misreporting from the employee perspective can shed new light on the costs of accounting failures.

We examine employee reactive behaviors in the period of misreporting (i.e., while misreporting is still in progress), and the period after restatement announcement. As inside stakeholders, employees may have intimate information about the firm and be able to detect some signs of ongoing misreporting-prone activities (Dyck, Morse, and Zingales 2010; Call, Kedia, and Rajgopal 2016). Thus, some employees who sense the abnormalities may choose to respond before the misreporting is exposed. We refer to this as the misreporting effect. Because not all employees have the same level of knowledge about different activities and transactions in the firm and possess expertise to know the accounting and reporting implications, the eventual restatement announcement should provide additional and substantive information, prompting further employee actions. We refer to this as the restatement effect.

We follow Carter and Lynch (2004), Babenko and Sen (2014), and Phua, Tham, and Wei (2018) and gauge employee turnover as stock options forfeiture rate because options forfeitures typically occur upon employee departure from the firm. Based on restatements announced between 2007 and 2015, our within-sample analyses show a significant increase in employee turnover in the post-restatement period. We also find some evidence that employee turnover starts to increase in the misreporting period. For economic significance, accounting restatements

give rise to an increase of 13.04 percent and 29.57 percent in employee turnover in the misreporting period and the post-restatement period, respectively, relative to the pre-misreporting period. The effects are incremental to what can be explained by changing firm characteristics, activities related to labor demand, and industry and time (year) trend.

Misreporting varies in nature and differs in outcome. More serious misstatements are found to have greater adverse effects than less serious ones (Hennes, Leone, and Miller 2008). In the context of employee turnover, we do find some evidence of differential reactions in the post-restatement period to allegedly more severe misstatements although we fail to find such evidence in the misreporting period, suggesting that employees in general face uncertainty and challenge in assessing the severity of in-progress misreporting. We also examine whether the documented relation between misreporting and employee turnover varies with the length of employee tenure with the firm. Misreporting firms with long-tenure employees who have better knowledge about the firms should have a more salient increase in employee turnover in the misreporting period. We find some evidence consistent with this implication.

We conduct a variety of robustness checks to further validate our inferences. First, one concern is that the misreporting (restatement) effect may be confounded by the labor demand. In the main regressions, we control for concurrent changes in firm behavior that may alter the firm's demand for labor. To further address this concern, we perform three subsample analyses based on (1) firing costs, (2) employee bargaining power, and (3) business restructuring. If the labor demand drives our results, we should observe a stronger effect when firing costs are lower, employees have weaker bargaining power, and firms experience business restructuring. We fail to find supportive evidence. Second, restatement announcement leads to a higher likelihood of executive turnover (e.g., Desai et al. 2006), which may artificially inflate the

estimated increase in employee turnover. We control for the impact of executive turnover and find that our results capture the rank-and-file employee turnover. Third, to address the concern that our results are driven by the employee turnover measure unduly capturing expired options due to declining stock prices, we (1) exclude restatements announced during the 2007 financial crisis and (2) examine whether the restatement effect depends on stock price. We find that the misreporting (restatement) effect is independent of the stock price effect. Fourth, it is possible that the disclosures of internal control weaknesses (ICWs) may signal potential accounting problems and prompt employees to leave in the misreporting period. We find that employee separation in the misreporting period is not driven by ICW disclosures, indicating that employees make turnover decisions based on information not confined to ICW disclosures. Lastly, our results continue to hold for an industry-, size-, and firm age-matched sample, suggesting that the misreporting and restatement effect on employee turnover is not an artifact of changes in macroeconomic conditions.

As another employee reaction, we follow Bova, Dou, and Hope (2015) and Bova, Kolev, Thomas, and Zhang (2014) and measure employee holding of employer stock as the dollar value of employer stock held in four defined contribution plans that allow direct investment in employer stock divided by the number of employees. The empirical results on the reactive changes in employee investment in employer stock to financial misreporting almost mirror what we have documented with regard to employee turnover: We find that employees dump employer stock from their retirement plans after misreporting is exposed and they start to do so even when misreporting is in progress; consistent with the notion that restatement announcements provide additional and substantive information and employees with long tenure with the firms have better knowledge of on-going misreporting, we find some evidence that the severe types of financial

misreporting induce a greater reduction in employee holding of employer stock after restatement announcement, and that employees having long tenure with the firm are more likely to reduce their holding of employer stock in the misreporting period. We also conduct several robustness checks to address (1) the stock price effect, (2) the ICWs disclosure effect, and (3) the effect of changing macroeconomic conditions. Our overall findings indicate that financial misreporting induces negative employee responses, which constitutes substantial costs to misreporting firms.

Our research makes three contributions to the literature. First, it adds to the literature that studies the economic consequences of restatements by documenting (1) new negative outcomes arising from responses of employees, a critical production factor, and (2) employees reacting to misreporting even before the problem is exposed, as compared with prior studies that mostly focus on external stakeholders' reactions to the public announcement of restatements. The human capital costs of financial misreporting, largely neglected in prior literature, indicate that accounting problems have adverse implications for corporate human capital retention and development. In this sense, our findings shed new light on the fact that shareholder wealth losses from restatements far exceed direct cash outlays (Karpoff et al. 2008a).

Second, our study complements the labor economics literature that examines the determining factors, such as "compensating differentials," for employee loyalty and commitment (Hamermesh and Wolfe 1990; Topel 1984) by showing that financial misreporting impairs employees' sense of belonging and commitment. The findings help further our understanding of the link between accounting and other corporate functions.

Lastly, we extend the research that examines employee reactions to corporate misdeeds by blowing the whistle (Dyck et al. 2010; Call et al. 2016). Our results shed more general light on the employee reactions to misreporting before it is uncovered. While whistle blowing is a

relatively rare and unique way to bring corporate frauds to light, our findings indicate that an increased employee turnover rate and decreased employee ownership may serve as an observable signal of in-progress misreporting.

II. RELATED LITERATURE AND HYPOTHESES

Related Literature

Prior literature finds that financial misreporting induces negative responses from various stakeholders, and thus incurs substantial costs to misreporting firms. From the perspective of shareholders, prior studies find that accounting restatements induce significant stock price drops and firm value losses (Anderson and Yohn 2002; Palmrose, Richardson, and Scholz 2004; Karpoff et al. 2008a), higher costs of equity capital (Hribar and Jenkins 2004), decline in the information content of earnings (Chen, Cheng, and Lo 2013), and reduced attractiveness in the market for corporate control (Amel-Zadeh and Zhang 2015). From a debtholders' perspective, Graham et al. (2008) report a substantial increase in loan costs after restatement announcement, and Chen (2016) finds that loan spreads start to increase even during the misreporting period. From the perspective of regulatory and law enforcement agencies, misreporting firms are found to incur substantial cash outlays on fines and penalties (Karpoff et al. 2008a) and face a higher likelihood of litigation (Palmrose and Scholz 2004). From a managerial labor market perspective, several studies find a higher likelihood of executive turnover and poor subsequent employment prospects of the involved managers and directors (Srinivasan 2005; Desai et al. 2006; Karpoff, Lee, and Martin 2008b).

Employees are critical stakeholders whose efforts and commitments are crucial to the firm's success. Karpoff et al. (2008a) infer that a significant portion of value losses from financial misrepresentation stems from reduced value of implicit claims with non-financial

stakeholders. Yet, there is little direct evidence on whether and how financial misreporting induces negative responses from non-financial stakeholders especially employees. The lack of evidence makes our understanding of the costs of financial misreporting to firms incomplete. This study thus focus on employees' responses to employers' financial misreporting.

Kedia and Philippon (2009) study firm actions and find that firms overinvest during periods of misreporting and shed labor and capital after misreporting is detected. They document a net increase in the number of employees during the misreporting period and a net drop in the post-restatement period. Their findings imply that hires exceed exits during the misreporting period whereas exits exceed hires in the post-restatement period, but do not inform the dynamics of exits. We are interested in employee separation arising from the labor supply effect, and also examine employee reaction to financial misreporting in terms of their investment decision.

Hypotheses

Employees tie up their human capital and retirement wealth with the firm. Thus, we study their responses to financial misreporting from two perspectives: (1) withdrawing human capital from the firm and (2) reducing holding of company stock in their retirement plans. Given that employees are inside stakeholders who have private access to firm information, we study their reactions in the misreporting period in addition to the period after restatement announcement.

We examine temporal changes in employee turnover and employee holding of employer stock along three distinct periods for misreporting firms. The misreporting period is defined as fiscal years in which a firm misreports its financial statements (based on the starting and ending dates of misreporting).³ We define the pre-misreporting period as the three years preceding the start year of the misreporting period. Since the pre-misreporting period serves as the benchmark period, we use the three-year window to smooth possible fluctuations of our measures of

³ The length of misreporting periods varies across firms, with a mean value of two years for our sample firms.

employee reactions. The post-restatement period is defined as the year after the restatement announcement year. We choose this short window because it would be difficult to attribute changes in employee turnover and employee ownership to a restatement if they are measured too far away from the announcement date (Desai et al. 2006).

We extract the misreporting and restatement effects by comparing the latter two periods with the baseline pre-misreporting period. Studying dynamics of employee responses has two major benefits. First, using a misreporting firm as its own control allows us to control for any time-invariant unobservable characteristics of misreporting firms. Second, obtaining effects from multiple periods can help us isolate specific economic mechanisms. For example, the increased employee turnover in the misreporting period cannot be explained by the demand side story.

Financial Misreporting and Employee Turnover

Employees in misreporting firms can contract their labor supply for several reasons. First, misreporting causes employees to doubt the firm's ability to fulfill the implicit claims about working conditions, future prospects, and job security (Cornell and Shapiro 1987; Bowen, DuCharme, and Shores 1995) and the ability to share risks (Baily 1974; Guiso, Pistaferri, and Schivardi 2005).⁴ The cases of Enron and WorldCom illustrate that accounting misconduct can force a firm out of business or even lead to its demise. Second, financial misreporting impairs the credibility of reporting, which increases employees' uncertainty about the value of employee-employer match (Jovanovic 1979). Lastly, misreporting, especially the fraudulent type, may

⁴ Rational employees may expect various negative outcomes of misreporting on the firm's operation, financial condition, and viability. Accounting improprieties, once revealed, can incur substantial cash outlays on legal costs, fines, and penalties (Palmrose and Scholz 2004; Karpoff et al. 2008a), increase financing costs (Graham et al. 2008; Hribar and Jenkins 2004), and lead to unfavorable trade terms from suppliers and customers (Karpoff et al. 2008a). Financial misreporting can also increase the cost of operations by diverting resources and managers' time to the investigation and forcing the firm to implement new monitoring and control policies.

contradict employees' moral standards and ethical values, breeding distrust on the management and the firm and hurting employees' sense of belonging and affiliation.

As inside stakeholders, employees may catch some signs of misreporting in progress through their participation in daily operations, direct observation of management decisions, ongoing tracking of transaction patterns, and even informal conversations with coworkers. Schrand and Zechman (2012) find that misreporting often begins small and snowballs, and Dyck et al. (2010) show that employees, due to their access to inside information and low cost of collecting information about the firm, uncover most misreporting cases of accounting-related shareholder lawsuits compared with external monitors. Call et al. (2016) find that executives grant greater options to rank-and-file employees during misreporting periods to discourage them from exposing the misconduct, suggesting that employees have some clues about misreporting. The awareness of misreporting may induce employees to depart during the misreporting period.

Typical employees at a company are unlikely to know about all the different activities and transactions; even if some employees know a lot about the firm, they still need expertise to grasp the accounting and reporting implications. The eventual restatement announcement should present additional and substantive information to employees and further prompts employees to part with the company. Thus, we propose the following hypotheses:

H1a: Employee turnover increases during the misreporting period relative to the pre-misreporting period.

H1b: Employee turnover increases during the post-restatement period relative to the pre-misreporting period.

Financial Misreporting and Employee Holding of Employer Stock

On the one hand, employee holding of company stock can benefit the company in certain ways such as increasing employee motivation and productivity (Kruse and Blasi 1995) and

placing the stock in friendly hands as a form of takeover defense (Rauh 2006). On the other hand, investing in employer stock is costly for employees due to insufficient diversification and their human capital being tied up with the company (Benartzi, Thaler, Utkus, and Sunstein 2007). Meulbroek (2005) estimates that employees can lose roughly 50 percent of the value of their portfolios with their employer stock relative to well-diversified portfolios after accounting for risk (Benartzi et al. 2007). Many factors can explain employees' investment in employer stock. One such factor is employee trust in and commitment to the company and management. When their confidence in the credibility of the employer's financial information is eroded and doubt over the company's future prospects arises, we expect employees to reduce holding of employer stock in their retirement benefit accounts. Thus, we propose the following hypotheses:

H2a: Employees reduce their holding of employer stock during the misreporting period relative to the pre-misreporting period.

H2b: Employees reduce their holding of employer stock during the post-restatement period relative to the pre-misreporting period.

III. FINANCIAL MISREPORTING AND EMPLOYEE TURNOVER

Data and Sample Selection

Our sample selection begins with 5,203 non-reliance restatements with filing year (fiscal year) between 2007 and 2015 in Audit Analytics for firms that are also covered in Compustat. The non-reliance restatements are those that undermine previous and/or current financial statements due to material accounting misrepresentation. The sample period for employee turnover analysis starts in 2007 as data on options cancellations in Compustat (used to measure employee turnover) are only available from 2004 onward and we need three-year data for the pre-misreporting period. To avoid any overlap of the three different periods, we exclude restatements whose misreporting beginning date is less than five year after the ending date of a

previous misstatement,⁵ which reduces the number of restatements to 2,658. We further require each misreporting firm to have necessary data from Compustat and CRSP on main variables (employee turnover measure, firm size, leverage, market-to-book, return on assets, capital expenditure, sales growth, firm age, stock return, employee growth, and asset growth) across all three periods. This leads to the final sample of 374 restatements, with 2,109 firm-year observations (988 observations in the pre-misreporting period, 747 in the misreporting period, and 374 in the post-restatement period).

Measuring Employee Turnover

Following prior studies (e.g., Phua et al. 2018; Carter and Lynch 2004; Babenko and Sen 2014), we estimate the likelihood of employee departure from the firm using stock options forfeiture rate. Options forfeitures typically occur upon employee separation from the firm (i.e., employees forfeit all unvested options and vested underwater options). Specifically, we calculate the rate (*EmployeeTurnover*) as the number of stock options cancellations, forfeitures, and expirations (*optca* from Compustat since 2004) divided by the number of non-executive employee stock options outstanding (i.e., the difference between total number of stock options outstanding [*optosey* from Compustat] and sum of the number of exercisable and non-exercisable executive stock options outstanding [*opt_unex_exer_num* plus *opt_unex_unexer_num* from ExecuComp]) in the beginning of the year.

This options-based measure of employee turnover may suffer from measurement noise. Thus we try different ways to address this issue.⁶ First, as the options cancellations variable in Compustat covers both executives and rank-and-file employees, one concern is that our measure

⁵ Using a similar within-sample analysis, Chen (2016) retains the first restatement of each firm during its sample period to avoid overlap of pre-misreporting period and misreporting period.

⁶ To assess the reasonableness of using the options-based measure as a proxy for overall employee turnover, Carter and Lynch (2004) relate the measure to the industry-level employee turnover data provided by the Saratoga Institute and find that the correlation is 0.66.

may primarily capture executive turnover because executives show a higher turnover rate after restatements in our setting. However, take note that unlike rank-and-file employees, executives generally can cliff vest their options when leaving the company.⁷ For example, when Zynga Inc.'s CEO Don Matrick resigned, the company accelerated the vesting of restricted stocks and unvested options for him.^{8,9} Therefore, the influence of executive turnover on our measure of employee turnover should be limited. We also analyze options grants and find that 67.14% of options outstanding are held by non-executive employees, suggesting our measure is heavily influenced by non-executive employee turnover. In our empirical analyses, we design specific tests to further address the concern by (1) controlling for executive turnover and (2) interacting executive turnover with *Misreporting* and *PostRestatement*, the two indicator variables denoting the misreporting and post-restatement period, respectively.

Second, departing employees typically forfeit unvested options and underwater vested options, but the Compustat item *optca* is an aggregate of cancelled, forfeited, and expired stock options. A natural concern is that our employee turnover measure may pick up stock options expiries due to stock price decline. However, employee options normally have a 10-year life and vest over 1-3 years. Prior studies find that non-executive employees, due to risk aversion and liquidity needs, often exercise options years before expiration (e.g., Huddart and Lang 1996; Carpenter, Stanton, and Wallace 2019). Because of employees' preferences for early exercise, it

⁷ Contractually, executives can only get their exit benefits when employment is terminated by the company without cause, or by the executives “for good reason.” In practice, it is rare for executives to be fired for cause. San Francisco-based analytics startup Quid searched millions of stories in news articles, blogs and news releases and found that the phrase “CEO is fired” or variations of it appeared in 1,786 stories, versus 32,508 stories for “CEO resigns.” Please see <https://www.sfchronicle.com/business/article/CEOs-never-get-fired-they-pursue-other-7948646.php?psid=4g79r>.

⁸Please see <https://www.marketwatch.com/story/ceos-get-paid-even-when-they-quit-because-they-can-2015-04-13>.

⁹ This practice is widely used by U.S. public companies for legal and strategic reasons such as (1) avoiding messy parting and prolonged legal fights between the company and executives, (2) protecting the company's intellectual property, and (3) avoiding public scrutiny and reputation damage in the managerial labor market.

is more likely for *optca* to capture forfeited than expired employee options. In our empirical study, we further address this noise by (1) excluding restatements announced during the 2007 financial crisis and (2) examining whether the relation between employee turnover and misreporting (restatement) depends on stock price performance.

Lastly, to address concerns that employee retirement may induce noise in our measure, we follow Phua et al. (2018) and include firm age in our regression analyses to proxy workforce age. To validate the employee turnover measure, we run correlations between *EmployeeTurnover* and three employment growth measures and current year stock return. The three employment growth measures are: change in the number of employees scaled by total assets ($\Delta EMP/AT_{t-1}$), employee growth rate ($\Delta EMP/EMP_{t-1}$), and change in the number of employees scaled by property, plant, and equipment ($\Delta EMP/PPENT_{t-1}$). Two of the measures are scaled by total assets and physical assets respectively to ensure that employment change is not simply a manifestation of across-the-board change in activity. As reported in Panel B of Table 1, *EmployeeTurnover* is positively and highly significantly correlated with all the three employment growth measures, suggesting the employee turnover measure captures some extent of change in the level of employment. Because employee change is the net result of hires and exits and *EmployeeTurnover* measures exits, we do not expect the two constructs to be perfectly correlated. We also find that the correlation between *EmployeeTurnover* and current year stock return is not statistically significant, suggesting that the employee turnover measure is not an artifact of expired stock options arising from declining stock prices.

Regression Model and Descriptive Statistics

Employing a within-sample temporal change design, we use ordinary least squares (OLS) to estimate the following regression model:

$$\begin{aligned}
EmployeeTurnover_t = & \beta_0 + \beta_1 * Misreporting_t + \beta_2 * PostRestatement_t + \beta_3 * SIZE_{t-1} \\
& + \beta_4 * Leverage_{t-1} + \beta_5 * MTB_{t-1} + \beta_6 * ROA_{t-1} + \beta_7 * R\&D_{t-1} + \beta_8 * Capex_{t-1} \\
& + \beta_9 * SalesGrowth_{t-1} + \beta_{10} * \text{Log}(AGE_{t-1}) + \beta_{11} * StockReturn_{t-1} \\
& + \beta_{12} * StockReturn_t + \beta_{13} * SalesGrowth_t + \beta_{14} * EmployeeGrowth_t \\
& + \beta_{15} * AssetGrowth_t + \beta_{16} * PPENTGrowth_t + \text{Industry fixed effects} \\
& + \text{Year fixed effects} + \epsilon_t,
\end{aligned} \tag{1}$$

where *Misreporting* and *PostRestatement* denote the misreporting and post-restatement period, respectively (equal to 1 for the corresponding period and 0 otherwise). The pre-misreporting period serves as the default period. Thus, β_1 captures change in *EmployeeTurnover* from the pre-misreporting to the misreporting period, and β_2 from the pre-misreporting to the post-restatement period. If employees catch signs of misreporting and react accordingly, we expect β_1 to be positive and significant. If employees react to restatement announcement, we expect the same for β_2 . Because we use a misreporting firm as its own control, the estimated misreporting effect (β_1) and restatement effect (β_2) are less likely to be confounded by time-invariant omitted variables.

We include in the regression a set of firm characteristics that may affect employee turnover. We control for firm size (*SIZE*), as large firms provide higher job security and should have a lower employee turnover rate (Lane, Isaac, and Stevens 1996). Leverage is positively related to bankruptcy risk and thus unemployment risk (Chemmanur, Cheng, and Zhang 2013). We include leverage ratio (*Leverage*) to account for the impact of financing on employment risk. Employees are less inclined to leave companies with superior accounting performance and growth options, and we include return on assets (*ROA*) and market-to-book ratio (*MTB*) to account for this effect. We also include R&D expenditure (*R&D*), capital investment (*Capex*), and sales growth (*SalesGrowth*) to account for the effect of business expansion on employee turnover. Ouimet and Zarutskie (2014) find that young firms tend to have younger workers, and these firms should have lower retirement. We include firm age ($\text{Log}[AGE]$) to address measurement noise of employee turnover introduced by retirement. Given our focus on the labor

supply effect, we relate employee turnover to these firm features in the most recent year to avoid forward-looking bias. We further include past and current year stock returns (*StockReturn*) because stock performance may affect employees' employment decision.

Prior studies find that firms overinvest during periods of misreporting and shed labor and capital after misreporting is detected (Kedia and Philippon 2009; McNichols and Stubben 2008). To account for this demand-side effect, we control for concurrent changes in firm behavior that may alter the firm's demand for labor. Since slow sales growth, employee downsizing, and reduced firm scale may cause shedding labor, we control for concurrent changes in sales growth (*SalesGrowth_{it}*), employment growth ($\Delta EMP/AT_{t-1}$), total assets growth (*AssetsGrowth_{it}*), and physical assets growth (*PPENTGrowth_{it}*). We scale employment change by total assets to ensure that employment cuts are not simply a manifestation of across-the-board cutbacks in activity.

Lastly, we include industry fixed effects to account for industry heterogeneity in employee turnover and year fixed effects to address concerns that temporal changes in employee turnover may just reflect changing macroeconomic situation. To avoid the undue influence of outliers, we winsorize all continuous variables at the 1st and 99th percentiles. All standard errors are adjusted for clustering at the firm level to account for serial correlations within a firm across years. Detailed variable definitions are in Appendix 1.

Table 1 presents descriptive statistics for the variables used in Equation (1). The mean (median) employee turnover is 0.131 (0.062), which is comparable to Phua et al. (2018). Panel A of Figure 1 plots the mean value of *EmployeeTurnover* in the three periods with 0.115 in the pre-misreporting period and up to 0.135 and 0.163 in the misreporting and the post-restatement period, respectively. The mean value of *Misreporting* and *PostStatement* indicates that the number of observations in the misreporting and post-restatement period accounts for 35.4 and

17.7 percent of total observations, respectively. Average firm size is 7.733, leverage ratio 0.232, market-to-book ratio 1.762, return on assets 0.034, the ratio of R&D expenditure to total assets 0.025, the ratio of capital expenditure to total assets 0.043, annual sales growth rate 0.083, firm age 27.19, and annual stock return 0.026. Employee growth is 0.015 percent of total assets, and the growth for total assets and for property, plant and equipment is 8.5 percent and 8.6 percent, respectively.

Empirical Results

We estimate Equation (1) with controls for firm characteristics, labor demand factors, industry and year fixed effects and report the results in Table 2. The coefficient on *Misreporting* is positive and marginally significant, providing some evidence that employees react to misreporting in-progress by exiting the company before it becomes known to the public. In terms of economic significance, the coefficient of 0.013 means a 13.04 percent increase in employee turnover in the misreporting period relative to the pre-misreporting period.¹⁰ The coefficient on *PostRestatement* is also positive and significant (0.034, p -value = 0.029) and the estimate implies a 29.57 percent (0.034/0.115) increase in employee turnover after restatement announcement, which is economically large and represents a substantial cost to misreporting firms, a phenomenon not documented in prior literature. The overall results suggest that some employees may smell ongoing misreporting and react by separating from the firm, and that public restatement announcement prompts more employee departures.¹¹

¹⁰ The coefficient on *Misreporting* divided by the mean value of *EmployeeTurnover* in the pre-misreporting period (0.013/0.115 = 13.04%).

¹¹ Call et al. (2016) find that executives grant more options to rank-and-file employees during misreporting periods. Our findings should not be driven by this observation as employee options normally have a 10-year life and vest over 1-3 years while the average misreporting period is 2 years.

As for the control variables, the coefficients are largely consistent with the predictions. Larger firms are found to have lower employee turnover, whereas more levered firms have higher turnover. Employees are less likely to leave firms with superior accounting performance and great growth potential. Although employee turnover is negatively related to both past and current stock returns, the magnitude and statistical significance of the coefficient on past stock returns is greater relative to current year stock returns. The association with past stock returns likely captures employees' choices for staying with good performance firms while the association with current year stock returns can be due to both employees' choices and the mechanical correlation between the employee turnover measure and current stock returns. Our results seem to suggest that the employee choice effect dominates. We find that the coefficients on all four variables that capture the labor demand are negative although only two of them are significant.

Financial misreporting varies in nature and differs in outcome. Prior studies find that more serious misreporting such as accounting irregularities has greater adverse effects than less serious misreporting such as accounting errors (Hennes et al. 2008). Because accounting frauds represent management's intentional acts and more severe misreporting is more likely targeted by the SEC, we classify as severe cases the misstatements that are identified by Audit Analytics as frauds or have been investigated by the SEC, and denote them by an indicator, *SevereRes*. To test whether the severe types of misreporting induce a greater increase in employee turnover, we add to Equation (1) *SevereRes* and its interaction terms with *Misreporting* and *PostRestatement* and report the estimated results in Table 3.¹² The results suggest that employees react to all types of misreporting, as the coefficients on *Misreporting* and *PostRestatement* remain positive and significant. Interestingly, the coefficient on the interaction term *SevereRes*PostRestatement* is

¹² All control variables in Equation (1) are included in the regression, but we do not report their coefficients for brevity.

positive and marginally significant but insignificant on *SevereRes*Misreporting*, suggesting that employees may not be able to tell the severity of misreporting during the misreporting period, but come to grips with the seriousness after restatement announcement.

We next perform a subsample analysis to inquire whether employee tenure with the firm affects the association between employee turnover and misreporting during the misreporting period. The analysis is motivated by the idea that employees having longer tenure with a firm tend to be more informed about, and thus more sensitive to, a firm's misreporting before it is publicly revealed, so that the association between employee turnover and misreporting should be stronger. Given the lack of data on employee tenure for individual firms, we use firm age to proxy employee tenure on the assumption that average employees in an older firm are likely to be with the firm for a longer time than in a younger firm.

We partition the sample into two subsamples based on firm age in the year before the misreporting period. We estimate Equation (1) separately for the two subsamples and report the results in Table 4. The coefficient on *Misreporting* is only significant for the long employee tenure subsample, consistent with our expectation. Moreover, its magnitude is greater than that for the short employee tenure subsample and the difference is statistically significant. We do not observe the difference in the coefficient on *PostRestatement* between the two subsamples, indicating little effect of employee tenure after misreporting is exposed.

Robustness Checks

Labor Demand Effect

Kedia and Philippon (2009) find a net increase in the number of employees during the misreporting period and a net drop in the post-restatement period, implying that hires exceed exits in the former period and the trend reverses in the latter period, but they do not inform

whether exits are greater during the misreporting and post-restatement period relative to the pre-misreporting period. We have controlled for various factors that are related to the labor demand in the main regressions. In this section, we conduct three analyses to further address the concern that the misreporting (restatement) effect may be confounded by the labor demand.

The first test involves a subsample analysis based on firing costs. Higher firing costs will make firms more cautious in laying off employees. If the increase in employee turnover after restatements is largely driven by the demand effect, the relation between employee turnover and restatement should be stronger when firing costs are lower. We follow prior studies and use state-level recognition of wrongful discharge laws (WDLs) to measure the costs of dismissing workers (e.g., Serfling 2016). We create an index by summing three distinct dummy variables for each of the three WDL exceptions (the good faith exception, the implied contract exception, and the public policy exception) and partition the sample into high and low firing cost subsamples based on the median value of the index. We estimate Equation (1) separately for the two subsamples and report the results in Panel A of Table 5. We fail to observe evidence that the effect of misreporting (restatement) on employee turnover is weaker in the high firing costs subsample, which is inconsistent with the labor demand explanation.

We run the second test by cutting the sample based on employee bargaining power. Labor union is found to provide workers greater bargaining power than any other factors (e.g., Bova et al. 2015). If higher employee turnover is the result of cutback on labor, we should observe a weaker relation between employee turnover and misreporting (restatement) in the situation of greater union coverage. We collect industry unionization data from the Union Membership and Coverage Database (UMCD). The database reports unionization rates each year for the three-digit Census Industry Classification (CIC) industries in the period 1983-2017. We

match the three-digit SIC codes to the six-digit NAICS codes in Compustat. We split the sample into the high and low bargaining power subsamples based on the median value of unionization rate. We estimate Equation (1) separately for the two subsamples and report the estimated results in Panel B of Table 5. As well, we fail to find a weaker effect of misreporting (restatement) in the high bargaining power subsample.

Our last test takes advantage of firm restructuring activities. A firm tends to reshuffle its labor force when experiencing business restructuring. If the labor demand effect dominates, we should observe a stronger relation between employee turnover and misreporting (restatement) when a firm restructures its business. We treat a firm experiencing restructuring if item *rcp* or *rca* from Compustat is nonzero. We estimate Equation (1) separately for restructuring firms and non-restructuring firms and report the estimated results in Panel C of Table 5. Again, we fail to find evidence consistent with the labor demand effect.

Impact of Executive Turnover

Prior studies document a higher likelihood of executive turnover following restatement announcement (e.g., Desai et al. 2006). This phenomenon can affect the association between employee turnover and restatement in several different ways. On the one hand, firing incumbent managers demonstrates restating firm's resolve to redress governance problems, which may boost employee confidence in the firm's future prospects, leading to a lower employee turnover. This will bias against us finding a positive relation between restatement and employee turnover. On the other hand, new executives may restructure the business and shed current labor, causing a positive relation between restatement and employee turnover. This demand side explanation has been addressed in the above section. In addition, if departing executives forfeit their options (as stated earlier, this does not typically happen), the value of our employee turnover measure may

be inflated, resulting in a mechanical positive relation between restatement and employee turnover.

To account for possible effects of executive turnover, we conduct two analyses by (1) controlling for executive turnover and (2) interacting executive turnover with *Misreporting* and *PostRestatement*. We obtain data on CEO/CFO turnover from the ExecuComp database and identify 482 firm-years with CEO or CFO turnover, among which 110 occur in the first year of restatement announcement. The 30 percent of restating firms that experience CEO/CFO turnover is comparable to prior studies (e.g., Amel-Zadeh and Zhang 2015).¹³ Since CEO turnover is generally accompanied by other executive turnover (Fee and Hadlock 2004), an indicator of CEO/CFO turnover should largely capture the turnover of other executives.

We first add an indicator variable, *ExcTurnover*, to the regression. Untabulated results show that its coefficient is positive, consistent with executive turnover contributing to the overall employee turnover, and that the coefficients on the two variables of interest (*Misreporting* and *PostRestatement*) remain largely unchanged. We then conduct a cross-sectional analysis to test whether the misreporting (restatement) effect is stronger when firms have executive turnover. As shown in Panel D, Table 5, the coefficients on the interaction terms (*ExcTurnover***Misreporting* and *ExcTurnover***PostRestatement*) are not statistically significant, suggesting that the effect of financial misreporting on employee turnover is not an artifact of executive turnover.

Stock Price Effect

If the employee turnover measure unduly captures expired options due to declining stock prices post-restatement, we may observe a mechanical relation between employee turnover and restatement. We have discussed earlier that this is less of a concern given that employees tend to

¹³ The number of misreporting firms that have CEO/CFO turnover divided by the total number of misreporting firms (110/374=0.30).

exercise their options well ahead of expiration date. We have also shown above an insignificant or weak correlation between the employee turnover measure and current year stock return. In this subsection, we further address this issue by conducting two tests. First, we exclude restatements announced during the 2007 financial crisis (2007-2009) and re-estimate Equation (1). As shown in Panel E of Table 5, the coefficients on *Misreporting* and *PostRestatement* remain largely unchanged, suggesting that the market-wide shock to stock prices does not drive our results.

Second, we examine whether the restatement effect on employee turnover depends on stock price. To facilitate interpretation, we create an indicator variable, *LowStockPrc*, based on the median value of current year stock return with a value of one denoting lower-than-median return. We interact *LowStockPrc* with *Misreporting* and *PostRestatement*. As shown in Panel F of Table 5, the coefficient on *PostRestatement* remains positive and significant, and the coefficient on the interaction term with *LowStockPrc* is marginally significant, suggesting that declining stock prices do not subsume the restatement effect. In contrast, the coefficients on both *Misreporting* and the interaction term with *LowStockPrc*Misreporting* are not significant. The overall results suggest that the restatement effect is not an artifact of declining stock prices.

Internal Control Weakness Disclosures

The existence of ICWs indicates a higher likelihood of misreporting. If a firm discloses ICWs before any restatement, it may well signal a potential accounting failure. In this case, the documented misreporting effect in the misreporting period may stem from ICW disclosures rather than employees having inside information about misreporting. To test whether employees have information beyond what can be inferred from ICW disclosures, we conduct two analyses by (1) adding an indicator variable (*ICW*) to the regression and (2) interacting *ICW* with *Misreporting* and *PostRestatement*. We obtain ICW data from Audit Analytics and set the value

of *ICW* to one if a misreporting firm discloses ICWs and zero otherwise. We identify 158 ICW disclosures for 2,068 firm-year observations. The rate of 7.64 percent is consistent with prior research that also documents a low rate of reported ICWs among firms with concurrent misstatements especially in more recent years (e.g., DeFond and Lennox 2017). Untabulated results indicate that controlling for ICW disclosures has little impact on *Misreporting* and *PostRestatement*. We report the interaction analysis results in Panel G of Table 5. While the coefficients on *Misreporting* and *PostRestatement* remain positive and significant, we fail to observe significant coefficients on the two interaction terms, suggesting that the ICW disclosure effect does not subsume the misreporting (restatement) effect. The overall results suggest that employees make investment decisions based on information not confined to ICW disclosures.

Matched Sample Analysis

In our main regression analyses, we include industry and year fixed effects to account for the industry heterogeneity and time-series trend in employee turnover. However, unobservable time-series changes contemporaneous with misreporting could also affect the estimated influence of misreporting and restatement. To address this concern, we create a matched control sample for the misreporting sample and then use difference-in-differences (DiD) estimation to remove the effect of contemporaneous shocks.

We follow prior studies (e.g., Kedia and Philippon 2009; Desai et al. 2006) and create a matched control sample based on firm size, industry, and age. Specifically, for each misreporting firm, we first identify potential control firms in the same year and industry (2-digit SIC code) with firm age difference less than 5 percent.¹⁴ Among these firms, we then choose at most three

¹⁴ As pointed out by Desai et al. (2006), firm age is an important factor for accounting misreporting. First, the SEC is more likely to scrutinize young growth firms (Beneish 1999). Second, young firms have greater incentive to manipulate earnings, as they tend to seek external financing more frequently.

firms whose sizes are closest to the misreporting firm. This matching yields a total matched sample of 4,139 observations.

For DiD estimation, we modify Equation (1) by adding an indicator variable *ResFirm* (equal to one for the misreporting firms and zero for the control firms), and the interaction terms with *Misreporting* and *PostRestatement*. The coefficients on *Misreporting* and *PostRestatement* represent changes in employee turnover for the control firms in the misreporting period and the post-restatement period. The coefficients on the two interaction terms (*ResFirm*Misreporting* and *ResFirm*PostRestatement*) are DiD estimators, capturing incremental increases in employee turnover for misreporting firms relative to matched control firms in the misreporting and post-restatement period. We report the estimated results in Panel H of Table 5 and find that misreporting firms register a significantly incremental change in employee turnover in both the misreporting period and the post-restatement period.

IV. FINANCIAL MISREPORTING AND EMPLOYEE OWNERSHIP

Data and Sample Selection

Our sample selection for employee ownership analysis begins with 8,620 non-reliance restatements with filing year (fiscal year) between 2004 and 2015 in Audit Analytics for firms that are also covered by Compustat. We exclude restatements whose misreporting beginning date is less than five year after the ending date of a previous misstatement and are left with 4,486 cases of restatement. The sample further reduces to 2,394 restatements after requiring the availability of data on main control variables (dividend-to-price, price-to-earnings, firm size, leverage, market-to-book, return on assets, capital expenditure, sales growth, firm age, and stock return) from Compustat and CRSP. We collect the dollar value of company stock held in employee retirement plans from Form 5500 Schedule H filings of employee retirement plans on

the website of the Department of Labor.¹⁵ We retain 772 restating firms that have the data. We further require restating firms to have at least one observation in each of the three periods, which leads to 354 restatements with 1,904 firm-year observations (841 observations in the pre-misreporting period, 709 in the misreporting period, and 354 in the post-restatement period).

Measuring Employee Holding of Employer Stock

Following Bova et al. (2015) and Bova et al. (2014), we measure employee holding of employer stock (*Employer_Stock*) as the dollar value of employer stock held (item *Id1* of Form 5500) in four defined contribution plans that allow direct investment in employer stock divided by the number of employees (item *EMP* from Compustat). Specifically, we include employee stock ownership plans, 401k plans, deferred profit-sharing plans invested in employer stock, and employer stock bonus plans. We aggregate stockholdings across these four employee ownership plans for a given firm in a year and merge the data with Compustat by the business entity's Employer Identification Number (EIN).

Regression Model and Descriptive Statistics

As in employee turnover analyses, we use the following within-sample temporal change design to estimate the effect of misreporting (restatement) on employee holding of employer stock:

$$\begin{aligned} \text{Log}(1+\text{Employer_Stock}_t) = & \beta_0 + \beta_1 * \text{Misreporting}_t + \beta_2 * \text{PostRestatement}_t \\ & + \beta_3 * \text{Stock_Match}_t + \beta_4 * \text{Dividend-to-Price}_{t-1} \\ & + \beta_5 * \text{Price-to-Earnings}_{t-1} + \beta_6 * \text{SIZE}_{t-1} + \beta_7 * \text{Leverage}_{t-1} \\ & + \beta_8 * \text{MTB}_{t-1} + \beta_9 * \text{ROA}_{t-1} + \beta_{10} * \text{R\&D}_{t-1} + \beta_{11} * \text{Capex}_{t-1} \\ & + \beta_{12} * \text{SalesGrowth}_{t-1} + \beta_{13} * \text{Log(AGE)}_t + \beta_{14} * \text{StockReturn}_{t-1} \\ & + \beta_{15} * \text{StockReturn}_t + \text{Industry fixed effects} \\ & + \text{Year fixed effects} + \epsilon_t. \end{aligned} \tag{2}$$

¹⁵ The website can be accessed at: <https://www.dol.gov/agencies/ebsa/about-ebsa/our-activities/public-disclosure/foia/form-5500-datasets>.

Due to right skewness in the data, we take the logarithm of one plus *Employer_Stock* as the dependent variable. If employees react to misreporting by reducing their holding of employer stock, we expect β_1 to be negative and significant. As well, if employees react to restatement announcement, we expect the same for β_2 .

We control for stock contribution (*Stock_Match*), as some employee holding of company stock result directly from employers' plan contributions in the form of company stock (Meulbroek 2005). An endorsement effect may also lead employees to invest more of their retirement savings to employer stocks as they interpret the form of employers' contributions as implicit investment advice (Benartzi 2001). We also include two value multiples as controls: dividend to price ratio (*dividend_to_price*) and price to earnings ratio (*price_to_earnings*). In addition, we include in the regression a set of firm characteristics that may affect employee holding of employer stock. We control for firm size (*SIZE*) and firm age (*AGE*), as employees are more likely to hold less risky securities in their retirement plans. We include leverage ratio (*Leverage*) to account for the effect of financial structure, and return on assets (*ROA*) and market-to-book ratio (*MTB*) to account for the effect of firm performance and growth opportunities. We also include R&D expenditure (*R&D*), capital investment (*Capex*), and sales growth (*SalesGrowth*) to account for the stage of firm life cycle. We further include past and current year stock returns (*StockReturn*) because stock market performance can affect employees' decision to hold company stocks. Lastly, we include industry fixed effects to account for industry heterogeneity and year fixed effects to account for the effect of changing macroeconomic situation. We winsorize all continuous variables at the 1st and 99th percentiles and adjust all standard errors for clustering at the firm level.

Table 6 presents descriptive statistics for the variables used in Equation (2). The mean (median) value of equity in employer stock held per employee is \$6,641 (1,148), which is comparable to prior studies (e.g., Bova et al. 2014; Bova et al. 2015; Phua et al. 2018). Panel B of Figure 1 plots the mean value of *employer_stock* in the three periods which is \$7,125 in the pre-misreporting period and down to \$6,326 and \$6,125 in the misreporting and post-restatement period, respectively. The mean value of *Misreporting* and *PostStatement* indicates that the number of observations in the misreporting and post-restatement period accounts for 37.2 and 18.6 percent of total observations, respectively. Roughly 2.3 percent of firms match their contributions in the form of company stock. The average sample firm has dividend to price ratio of 1.3 percent and price to earnings ratio of 14. Average firm size is 6.841, leverage ratio 0.237, market-to-book ratio 1.715, return on assets -0.008, the ratio of R&D expenditure to total assets 0.036, the ratio of capital expenditure to total assets 0.045, annual sales growth rate 0.106, firm age 27.543, and annual stock return 0.032.

Empirical Results

The coefficient estimates from Equation (2) are reported in Table 7. As expected, we find a negative and significant coefficients on *Misreporting* (coef. = -0.362; *p*-value = 0.020). As the dependent variable is logarithm transformed, this coefficient means that the average employee holding of employer stock during the misreporting period is 69.6% ($\exp[-0.362] = 0.696$) of the average employee ownership in the pre-misreporting period. The coefficient on *PostRestatement* is also negative and significant (coef. = -0.1071; *p*-value = 0.000), and this implies that the average employee ownership in the post-restatement period is 34.3% of that in the pre-

misreporting period. The results suggest that employees start to offload employer stock in the misreporting period and do it even further after restatement announcement.¹⁶

With respect to the control variables, we find that employees in large and mature companies are more likely to hold employer stock in their retirement plans, consistent with Meulbroek (2005). Also, stock contribution is positively related to employee holding of employer stock. In addition, employees seem to avoid employer stock in companies with high R&D and sales growth, suggesting that employees prefer safe securities to high growth stocks in their retirement plans. We further find that current year stock return is positively related to *Employer_Stock*. This can be due to employees' holding of employer stock with superior return and/or a mechanical relation between the value of employer stock held by employees and stock price. In robustness checks, we conduct two tests to ensure that the relation between employee holding of employer stock and misreporting (restatement) is not driven by declining stock prices.

We also examine whether the severe types of misreporting induce a greater reduction in employee holding of employer stock. We add to Equation (2) *SevereRes* and its two interaction terms with *Misreporting* and *PostRestatement* and report the estimated results in Table 8. The coefficients on *Misreporting* and *PostRestatement* remain negative and significant, suggesting that employees react to all types of misreporting by reducing their ownership. As in the employee turnover analysis, we find that employee ownership is sensitive to more severe misreporting only after the restatement announcement, suggesting that public announcements provide additional and substantive information to employees.

¹⁶ When use *Employer_Stock* rather than its logarithm transformation as the dependent variable, the coefficient on *Misreporting* is 1,375 (p -value = 0.013) and the coefficient on *PostRestatement* is 1,451 (p -value = 0.041).

We next perform a subsample analysis to inquire whether employee tenure with the firm affects the association between employee ownership and misreporting during the misreporting period. We partition the sample into two subsamples based on firm age and estimate Equation (2) separately for the two subsamples. As reported in Table 9, the coefficient on *Misreporting* is only significant for the long tenure subsample, and the magnitude of coefficient more than double that for the short tenure subsample although the difference is not significant. The coefficient on *PostRestatement* is similar for both two subsamples. The overall results suggest that long tenure with the firm provides employees information advantages during the misreporting period, but has little effect after misreporting is publicly exposed.

Robustness Checks

Stock Price Effect

To examine whether the documented relation between the value of employee ownership and misreporting (restatement) simply reflects the declining stock price effect, we also conduct two tests as in the turnover analysis. First, we exclude restatements that were announced during the 2007 financial crisis (2007-2009). As reported in Panel A of Table 10, the coefficients on *Misreporting* and *PostRestatement* remain negative and significant, suggesting that the documented misreporting and restatement effect is not due to market-wide shock to stock prices.

Second, we examine whether the misreporting (restatement) effect on employee holding of employer stock depends on stock price. We interact *LowStockPrc* with *Misreporting* and *PostRestatement*. As reported in Panel B of Table 10, the coefficients on the two interaction terms are not negatively significant, suggesting that the reduced employee holding of employer stock in the misreporting and post-restatement period is not a reflection of declining stock prices.

Internal Control Weakness Disclosure

To examine whether ICW disclosures affect the misreporting effect and restatement effect on employee holding of employer stock, we conduct two tests by (1) adding *ICW* to the regression and (2) interacting *ICW* with *Misreporting* and *PostRestatement*. Untabulated results indicate that after controlling for ICW disclosures, the coefficients on *Misreporting* and *PostRestatement* remain largely unchanged. We report the second test results in Panel C of Table 10. The coefficient on the two interaction terms are not statistically significant. The results suggest that ICW disclosures have little impact on the misreporting and restatement effects.

Matched Sample Analysis

We use the same method as in the employee turnover analysis to create a matched control sample and estimate a DiD regression for employee holdings of employer stock. As reported in Panel D of Table 10, misreporting firms register a significantly incremental change in employee ownership relative to the control firms only in the post-restatement period.

6. Conclusion

Employees are internal stakeholders who tie up their human capital with the firm and thus bear substantial costs for firm accounting failures by potentially losing their jobs and retirement wealth. Yet, little is known about whether and how they respond to the firm's financial misreporting in general. Our study fills this gap by investigating whether financial misreporting induces an increase in employee turnover and a decrease in employee holding of employer stock in the period before the misreporting is uncovered to the public and the period following the restatement announcement. This inquiry is important as both increased employee turnover and decreased employee ownership impose significant costs on misreporting firms.

Using within-sample analyses, we find that misreporting firms experience an increase of 13.04 percent in employee turnover in the misreporting period and of 29.75 percent in the post-restatement period, relative to the pre-misreporting period. The effect of misreporting and restatement on employee turnover is incremental to what can be explained by changing firm characteristics, changing firm behavior that may alter labor demand, and industry and time (year) trend. We also find some evidence that more severe misreporting induces greater employee turnover in the post-restatement period although we do not find it in the misreporting period, and that only employees having long tenure with the firm react to misreporting before it is revealed publicly. A battery of robustness tests indicate that the misreporting (restatement) effect on employee turnover (1) is not subsumed by the labor demand effect, (2) is not an artifact of increased likelihood of CEO turnover around the restatement announcement, (3) is not the result of declining stock prices, (4) is not driven by the information confined in ICW disclosures in the misreporting period, and (5) is robust to the matched sample estimation.

As another employee reaction, we find that employees reduce holding of company stock in their retirement plans after the restatement announcement and some evidence that they start to do so even when the misreporting is in progress. Similarly, we find that the severity of misreporting matters for employee ownership only in the post-restatement period and that long employee tenure matters in the misreporting period. We conduct a slew of robustness checks as well. In sum, we provide evidence of substantial human capital costs of financial misreporting to misreporting firms, shedding new light on the negative consequences of accounting failures.

REFERENCES

- Amel-Zadeh, A., Zhang, Y., 2015. The economic consequences of financial restatements: Evidence from the market for corporate control. *The Accounting Review* 90, 1-29.
- Anderson, K.L., Yohn, T.L., 2002. The effect of 10K restatements on firm value, information asymmetries, and investors' reliance on earnings. Working paper: Georgetown University. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=332380
- Babenko, I., Sen, R., 2014. Money left on the table: An analysis of participation in employee stock purchase plans. *Review of Financial Studies* 27, 3658-3698.
- Baily, M.N., 1974. Wages and employment under uncertain demand. *The Review of Economic Studies* 41, 37-50.
- Benartzi, S., 2001. Excessive extrapolation and the allocation of 401 (k) accounts to company stock. *The Journal of Finance* 56, 1747-1764.
- Benartzi, S., Thaler, R.H., Utkus, S.P., Sunstein, C.R., 2007. The law and economics of company stock in 401 (k) plans. *The Journal of Law and Economics* 50, 45-79.
- Beneish, M.D., 1999. The detection of earnings manipulation. *Financial Analysts Journal* 55, 24-36.
- Bova, F., Dou, Y., Hope, O.K., 2015. Employee ownership and firm disclosure. *Contemporary Accounting Research* 32, 639-673.
- Bova, F., Kolev, K., Thomas, J.K., Zhang, X.F., 2014. Non-executive employee ownership and corporate risk. *The Accounting Review* 90, 115-145.
- Bowen, R.M., DuCharme, L., Shores, D., 1995. Stakeholders' implicit claims and accounting method choice. *Journal of Accounting and Economics* 20, 255-295.
- Call, A.C., Kedia, S., Rajgopal, S., 2016. Rank and file employees and the discovery of misreporting: The role of stock options. *Journal of Accounting and Economics* 62, 277-300.
- Carpenter, J.N., Stanton, R., Wallace, N., 2019. Employee Stock Option Exercise and Firm Cost. *The Journal of Finance* 74, 1175-1216.
- Carter, M.E., Lynch, L.J., 2004. The effect of stock option repricing on employee turnover. *Journal of Accounting and Economics* 37, 91-112.
- Chemmanur, T.J., Cheng, Y., Zhang, T., 2013. Human capital, capital structure, and employee pay: An empirical analysis. *Journal of Financial Economics* 110, 478-502.
- Chen, P.-C., 2016. Banks' acquisition of private information about financial misreporting. *The Accounting Review* 91, 835-857.
- Chen, X., Cheng, Q., Lo, A.K., 2013. Is the decline in the information content of earnings following restatements short-lived? *The Accounting Review* 89, 177-207.
- Cornell, B., Shapiro, A.C., 1987. Corporate stakeholders and corporate finance. *Financial Management*, 5-14.
- David, G., Brachet, T., 2011. On the determinants of organizational forgetting. *American Economic Journal: Microeconomics* 3, 100-123.
- DeFond, M.L., Lennox, C.S., 2017. Do PCAOB inspections improve the quality of internal control audits? *Journal of Accounting Research* 55, 591-627.

- Desai, H., Hogan, C.E., Wilkins, M.S., 2006. The reputational penalty for aggressive accounting: Earnings restatements and management turnover. *The Accounting Review* 81, 83-112.
- Dyck, A., Morse, A., Zingales, L., 2010. Who blows the whistle on corporate fraud? *The Journal of Finance* 65, 2213-2253.
- Graham, J.R., Li, S., Qiu, J., 2008. Corporate misreporting and bank loan contracting. *Journal of Financial Economics* 89, 44-61.
- Guiso, L., Pistaferri, L., Schivardi, F., 2005. Insurance within the firm. *Journal of Political Economy* 113, 1054-1087.
- Huddart, S., Lang, M., 1996. Employee stock option exercises an empirical analysis. *Journal of Accounting and Economics* 21, 5-43.
- Hamermesh, D.S., Wolfe, J.R., 1990. Compensating wage differentials and the duration of wage loss. *Journal of Labor Economics* 8, S175-S197.
- Hennes, K.M., Leone, A.J., Miller, B.P., 2008. The importance of distinguishing errors from irregularities in restatement research: The case of restatements and CEO/CFO turnover. *The Accounting Review* 83, 1487-1519.
- Hribar, P., Jenkins, N.T., 2004. The effect of accounting restatements on earnings revisions and the estimated cost of capital. *Review of Accounting Studies* 9, 337-356.
- Jovanovic, B., 1979. Job matching and the theory of turnover. *Journal of Political Economy* 87, 972-990.
- Karpoff, J.M., Lee, D.S., Martin, G.S., 2008a. The cost to firms of cooking the books. *Journal of Financial and Quantitative Analysis* 43, 581-611.
- Karpoff, J.M., Lee, D.S., Martin, G.S., 2008b. The consequences to managers for financial misrepresentation. *Journal of Financial Economics* 88, 193-215.
- Kedia, S., Philippon, T., 2009. The economics of fraudulent accounting. *Review of Financial Studies* 22, 2169-2199.
- Kruse, D., Blasi, J., 1995. Employee ownership, employee attitudes, and firm performance. Working paper: National Bureau of Economic Research.
- Lane, J.I., Isaac, A.G., Stevens, D.W., 1996. Firm heterogeneity and worker turnover. *Review of Industrial Organization* 11, 275-291.
- Meulbroek, L., 2005. Company stock in pension plans: How costly is it? *The Journal of Law and Economics* 48, 443-474.
- McNichols, M.F., Stubben, S.R., 2008. Does earnings management affect firms' investment decisions? *The Accounting Review* 83, 1571-1603.
- Ouimet, P., Zarutskie, R., 2014. Who works for startups? The relation between firm age, employee age, and growth. *Journal of Financial Economics* 112, 386-407.
- Palmrose, Z.-V., Richardson, V.J., Scholz, S., 2004. Determinants of market reactions to restatement announcements. *Journal of Accounting and Economics* 37, 59-89.
- Palmrose, Z.-V., Scholz, S., 2004. The circumstances and legal consequences of non-GAAP reporting: Evidence from restatements. *Contemporary Accounting Research* 21, 139-180.
- Phua, K., Tham, T.M., Wei, C., 2018. Are overconfident CEOs better leaders? Evidence from stakeholder commitments. *Journal of Financial Economics* 127, 519-545.

- Rauh, J.D., 2006. Investment and financing constraints: Evidence from the funding of corporate pension plans. *The Journal of Finance* 61, 33-71.
- Schrand, C.M., Zechman, S.L., 2012. Executive overconfidence and the slippery slope to financial misreporting. *Journal of Accounting and Economics* 53, 311-329.
- Serfling, M., 2016. Firing costs and capital structure decisions. *The Journal of Finance* 71, 2239-2286.
- Srinivasan, S., 2005. Consequences of financial reporting failure for outside directors: Evidence from accounting restatements and audit committee members. *Journal of Accounting Research* 43, 291-334.
- Topel, R.H., 1984. Equilibrium earnings, turnover, and unemployment: New evidence. *Journal of Labor Economics* 2, 500-522.

Appendix 1

Variable definitions

Misreporting variables. Source: Audit Analytics.

<i>Misreporting</i>	=	1 if a firm-year is in the misreporting period and 0 otherwise.
<i>PostRestatement</i>	=	1 if a firm-year is in the post-restatement period (one year after the restatement announcement) and 0 otherwise.
<i>SevereRes</i>	=	1 if a misstatement is identified by Audit Analytics as fraud or being investigated by the SEC.

Employee turnover variable. Source: Compustat and ExecuComp.

<i>EmployeeTurnover</i>	=	options forfeiture rate estimated as the number of stock options cancellations, forfeitures, and expirations (<i>OPTCA</i> from Compustat since 2004) divided by the number of non-executive employee stock options outstanding (i.e., the difference between total number of stock options outstanding [<i>OPTOSEY</i> from Compustat] and sum of the number of exercisable and non-exercisable executive stock options outstanding [<i>OPT_UNEX_EXER_NUM</i> + <i>OPT_UNEX_UNEXER_NUM</i> from ExecuComp]) in the beginning of the year.
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Firm-specific characteristics for analyses of employee turnover. Source: Compustat and CRSP.

<i>SIZE</i>	=	firm size estimated as the natural logarithm of total assets (AT).
<i>Leverage</i>	=	leverage ratio calculated as long-term debt (DLTT) plus short-term debt (DLC) divided by total assets (AT).
<i>MTB</i>	=	market-to-book ratio estimated as total assets (AT) minus book value of equity (CEQ) plus market value of equity (PRCC*CSHO) divided by total assets.
<i>ROA</i>	=	return on assets estimated as earnings before extraordinary items (IB) divided by total assets (AT).
<i>R&D</i>	=	R&D expenditure estimated as R&D expense (XRD) divided by total assets (AT).
<i>Capex</i>	=	capital expenditure (CAPX) divided by total assets (AT).
<i>SalesGrowth</i>	=	sales growth estimated as sales in current year (SALE) minus sales in the previous year divided by sales in the previous year.
<i>AGE</i>	=	firm age since the firm first appears in Compustat.
<i>StockReturn</i>	=	buy-and-hold monthly return over the current year minus the buy-and-hold of the value-weighted market index.
<i>EmployeeGrowth</i>	=	change in the number of employee ($EMP_t - EMP_{t-1}$) scaled by total assets at the beginning of the year (AT_{t-1}).
<i>AssetGrowth</i>	=	change in total assets (AT).
<i>PPENTGrowth</i>	=	change in property, plant, and equipment (PPENT).
<i>ExeTurnover</i>	=	1 if a firm has CEO or CFO turnover and 0 otherwise.
<i>ICW</i>	=	1 if a firm discloses internal control weakness during the misreporting period and 0 otherwise.
<i>LowStockPrc</i>	=	1 if the current year stock return is below the median value and 0 otherwise.
<i>ResFirm</i>	=	1 for misreporting firms and 0 for matched control firms.

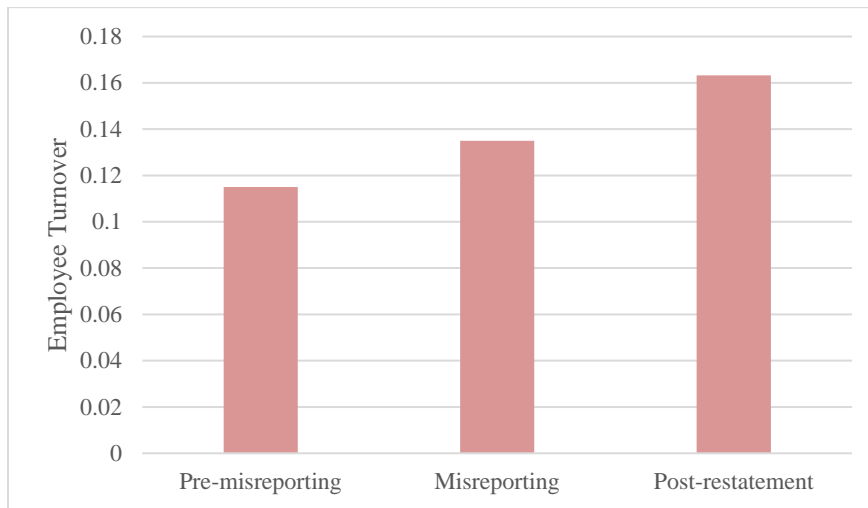
Additional variables for analyses of employee holding of employer stock. Source: Compustat and Form 5500 Schedule H filings of employee retirement plans on the website of the Department of Labor.

<i>Employer_Stock</i>	=	dollar value of employer stock holding per employee estimated as the dollar value of employer stock held (item 1d1 of Form 5500) divided by the number of active plan participants (item 6a2 of Form 5500).
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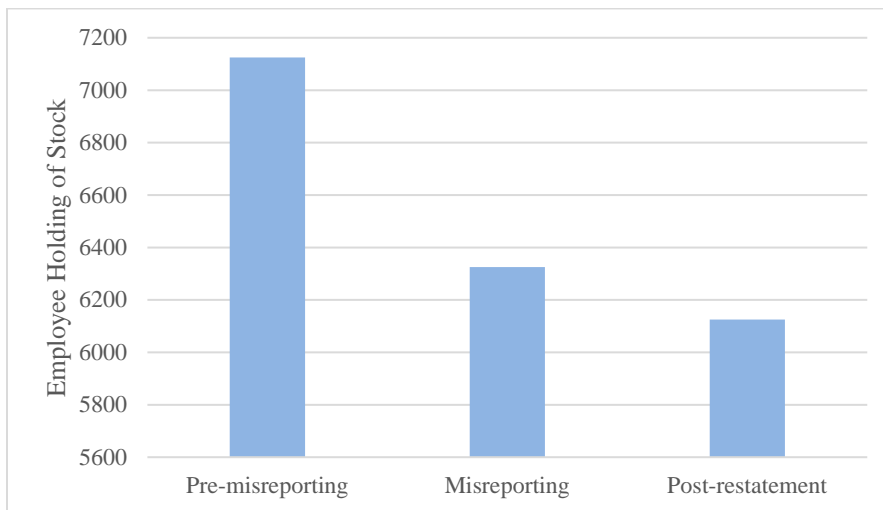
<i>Stock_Match</i>	=	1 if employer matches its contribution with company stock and 0 otherwise.
<i>Dividend_to_Price</i>	=	Dividend to price ratio estimated as dividend (DVC) divided by market value of equity (PRCC_F*CSHO).
<i>Price_to_Earnings</i>	=	Price to earnings ratio estimated as market value of equity (PRCC_F* CSHO) divided by earnings before extraordinary items (IBC).

Figure 1

Panel A: Employee turnover rate in the pre-misreporting, misreporting, and post-restatement periods



Panel B: Employee holding of employer stock in the pre-misreporting, misreporting, and post-restatement periods



The misreporting period is defined as fiscal years in which a firm misreports its financial statements (based on the start and end dates of misreporting in Audit Analytics). The pre-misreporting period is defined as the three years preceding the start year of the misreporting period. The post-restatement period is defined as the year after the restatement announcement.

Table 1

Descriptive statistics for the sample of employee turnover and validation of employee turnover measure

Panel A: Descriptive statistics					
Variables	Mean	Std. Dev.	25%	Median	75%
<i>EmployeeTurnover_t</i>	0.131	0.196	0.023	0.062	0.151
<i>Misreporting_t</i>	0.354	0.478	0.000	0.000	1.000
<i>PostRestatement_t</i>	0.177	0.382	0.000	0.000	0.000
<i>SIZE_{t-1}</i>	7.733	1.569	6.628	7.648	8.804
<i>Leverage_{t-1}</i>	0.232	0.183	0.082	0.212	0.347
<i>MTB_{t-1}</i>	1.762	1.001	1.120	1.440	1.993
<i>ROA_{t-1}</i>	0.034	0.091	0.010	0.043	0.077
<i>R&D_{t-1}</i>	0.025	0.048	0.000	0.000	0.028
<i>Capex_{t-1}</i>	0.043	0.046	0.014	0.030	0.055
<i>SalesGrowth_{t-1}</i>	0.083	0.219	-0.024	0.067	0.165
					40.00
<i>AGE_{t-1}</i>	27.187	17.045	14.000	21.000	0
<i>StockReturn_{t-1}</i>	0.033	0.380	-0.199	-0.016	0.195
<i>StockReturn_t</i>	0.026	0.384	-0.205	-0.020	0.184
<i>SalesGrowth_t</i>	0.070	0.209	-0.033	0.055	0.150
<i>EmployeeGrowth_t</i>	0.015	0.092	-0.009	0.002	0.025
<i>AssetGrowth_t</i>	0.085	0.230	-0.022	0.046	0.127
<i>PPENTGrowth_t</i>	0.086	0.268	-0.040	0.032	0.131

Panel B: Correlations of employee turnover measure with employee growth and stock return

	$\Delta EMP_t / At_{t-1}$	$\Delta EMP_t / EMP_{t-1}$	$\Delta EMP_t / PPENT_{t-1}$	StockReturn _t
<i>EmployeeTurnover_t</i>	-0.139	-0.157	-0.121	-0.012
	<.0001	<.0001	<.0001	0.572

Panel A of the table presents descriptive statistics of the variables used in our analyses of employee turnover for a sample of 2,109 firm-year observations from 374 distinct misreporting firms that filed restatements between fiscal year 2007 and 2015. Panel B presents the correlations between the measure of employee turnover and measures of employment growth and current year stock return. Continuous variables are winsorized at the 1st and 99th percentiles to reduce the influence of outliers. See variable definitions in Appendix 1.

Table 2
Financial misreporting and employee turnover

Variable	Dependent variable = <i>EmployeeTurnover_t</i>	
	Coef.	P-value
<i>Intercept</i>	0.358***	0.000
<i>Misreporting_t</i>	0.013*	0.081
<i>PostRestatement_t</i>	0.034**	0.029
<i>SIZE_{t-1}</i>	-0.026***	0.000
<i>Leverage_{t-1}</i>	0.102**	0.049
<i>MTB_{t-1}</i>	-0.019***	0.005
<i>ROA_{t-1}</i>	-0.335***	0.001
<i>R&D_{t-1}</i>	0.071	0.643
<i>Capex_{t-1}</i>	-0.249*	0.055
<i>SalesGrowth_{t-1}</i>	-0.047**	0.034
<i>AGE_{t-1}</i>	0.003	0.763
<i>StockReturn_{t-1}</i>	-0.054***	0.000
<i>StockReturn_t</i>	-0.026*	0.053
<i>SalesGrowth_t</i>	-0.052**	0.020
<i>EmployeeGrowth_t</i>	-0.095	0.125
<i>AssetGrowth_t</i>	-0.025	0.319
<i>PPENTGrowth_t</i>	-0.002	0.913
Industry FE		Yes
Year FE		Yes
N		2,109
R ²		22.65%

This table presents the OLS estimations of our primary model of employee turnover. Industry fixed effects are based on the two-digit SIC code. See variable definitions in Appendix 1. *p*-values are based on standard errors that are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels based on a one-sided test for the coefficients on *Misreporting* and *PostRestatement* and a two-sided test for the other variables, respectively.

Table 3

Financial misreporting and employee turnover—severity of misreporting

Variable	Dependent variable = <i>EmployeeTurnover_t</i>	
	Coef.	P-value
<i>Intercept</i>	0.320***	0.000
<i>Misreporting_t</i>	0.014*	0.077
<i>PostRestatement_t</i>	0.031**	0.041
<i>SevereRes_t</i>	0.030	0.586
<i>SevereRes_t*Misreporting_t</i>	-0.010	0.418
<i>SevereRes_t*PostRestatement_t</i>	0.106*	0.097
Control variables		Yes
Industry FE		Yes
Year FE		Yes
N		2,109
R ²		23.12%

This table presents OLS estimations of employee turnover on a varying degree of severity of misreporting. Industry fixed effects are based on the two-digit SIC code. See variable definitions in Appendix 1. *p*-values are based on standard errors that are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels based on a one-sided test for the coefficients on *Misreporting*, *PostRestatement*, *SevereRes*Misreporting*, and *SevereRes*PostRestatement* and a two-sided test for the other variables, respectively.

Table 4

Financial misreporting and employee turnover—employee tenure

Dependent variable = <i>EmployeeTurnover_{it}</i>						
Variable	Long Employee Tenure		Short Employee Tenure		Difference	P-value
	Coef.	P-value	Coef.	P-value		
<i>Intercept</i>	0.308***	0.001	0.172	0.122		
<i>Misreporting_{it}</i>	0.026**	0.021	-0.003	0.424	0.029	0.072
<i>PostRestatement_{it}</i>	0.037**	0.035	0.035	0.110	0.002	0.952
Control variables	Yes		Yes			
Industry FE	Yes		Yes			
Year FE	Yes		Yes			
N	1,090		1,019			
R ²	34.08%		23.97%			

This table presents OLS estimations of employee turnover for two subsamples partitioned by employee tenure. A firm falls into the long (short) employee tenure subsample if firm age is above (equal or below) the median value. Industry fixed effects are based on the two-digit SIC code. See variable definitions in Appendix 1. *p*-values are based on standard errors that are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels based on a one-sided test for the coefficients on *Misreporting* and *PostRestatement* and a two-sided test for the other variables, respectively.

Table 5

Financial misreporting and employee turnover—robustness checks

Panel A: Firing cost				
Variable	Dependent variable = <i>EmployeeTurnover_t</i>			
	High Firing Cost		Low Firing Cost	
	Coef.	P-value	Coef.	P-value
<i>Intercept</i>	0.375***	0.000	0.270***	0.003
<i>Misreporting_t</i>	0.014	0.122	0.014	0.206
<i>PostRestatement_t</i>	0.039**	0.032	0.017	0.293
Control variables	Yes		Yes	
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
N	1,543		551	
R ²	25.23%		29.10%	

Panel B: Employee bargaining power				
Variable	Dependent variable = <i>EmployeeTurnover_t</i>			
	High Power		Low Power	
	Coef.	P-value	Coef.	P-value
<i>Intercept</i>	0.482***	0.000	0.353***	0.000
<i>Misreporting_t</i>	0.020*	0.057	0.000	0.500
<i>PostRestatement_t</i>	0.038*	0.051	0.040*	0.079
Control variables	Yes		Yes	
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
N	901		899	
R ²	22.13%		27.16%	

Panel C: Restructuring				
Variable	Dependent variable = <i>EmployeeTurnover_t</i>			
	Restructuring		No Restructuring	
	Coef.	P-value	Coef.	P-value
<i>Intercept</i>	0.376***	0.000	0.303***	0.000
<i>Misreporting_t</i>	0.001	0.487	0.022**	0.023
<i>PostRestatement_t</i>	0.020	0.273	0.056***	0.002
Control variables	Yes		Yes	
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
N	984		1,110	
R ²	28.89%		26.68	

Panel D: Executive turnover

Variable	Dependent variable = <i>EmployeeTurnover_t</i>	
	Coef.	P-value
<i>Intercept</i>	0.332***	0.000
<i>Misreporting_t</i>	0.015*	0.059
<i>PostRestatement_t</i>	0.027*	0.066
<i>ExeTurnover_t</i>	0.058***	0.000
<i>ExeTurnover_t*Misreporting_t</i>	-0.008	0.357
<i>ExeTurnover_t*PostRestatement_t</i>	0.022	0.224
Control variables		Yes
Industry FE		Yes
Year FE		Yes
N		2,109
R ²		24.22%

Panel E: Excluding restatements announced during 2007 financial crisis

Variable	Dependent variable = <i>EmployeeTurnover_t</i>	
	Coef.	P-value
<i>Intercept</i>	0.340***	0.000
<i>Misreporting_t</i>	0.015*	0.097
<i>PostRestatement_t</i>	0.033*	0.072
Control variables		Yes
Industry FE		Yes
Year FE		Yes
N		1,890
R ²		23.57%

Panel F: Interacting with stock prices

Variable	Dependent variable = <i>EmployeeTurnover_t</i>	
	Coef.	P-value
<i>Intercept</i>	0.363***	0.000
<i>Misreporting_t</i>	0.010	0.202
<i>PostRestatement_t</i>	0.050**	0.014
<i>LowStockPrc</i>	0.018*	0.088
<i>LowStockPrc*Misreporting_t</i>	-0.006	0.360
<i>LowStockPrc*PostRestatement_t</i>	0.032*	0.097
Control variables		Yes
Industry FE		Yes
Year FE		Yes
N		2,109

R²

22.81%

Panel G: Internal control disclosure

Variable	Dependent variable = <i>EmployeeTurnover_t</i>	
	Coef.	P-value
<i>Intercept</i>	0.356***	0.000
<i>Misreporting_t</i>	0.015*	0.063
<i>PostRestatement_t</i>	0.027*	0.084
<i>ICW</i>	-0.003	0.892
<i>ICW*Misreporting_t</i>	-0.018	0.281
<i>ICW*PostRestatement_t</i>	0.036	0.161
Control variables		Yes
Industry FE		Yes
Year FE		Yes
N		2,068
R ²		22.68%

Panel H: Matched sample analysis

Variable	Dependent variable = <i>EmployeeTurnover_t</i>	
	Coef.	P-value
<i>Intercept</i>	0.284***	0.000
<i>Misreporting_t</i>	0.002	0.383
<i>PostRestatement_t</i>	0.007	0.298
<i>ResFirm</i>	0.002	0.822
<i>ResFirm*Misreporting_t</i>	0.015*	0.086
<i>ResFirm*PostRestatement_t</i>	0.036**	0.016
Control variables		Yes
Industry FE		Yes
Year FE		Yes
N		4,139
R ²		20.67%

Panel A presents a subsample analysis of employee turnover partitioned by firing costs. Firing costs, based on state-level recognition of wrongful discharge laws (WDLs), is the summation of three distinct dummy variables for each of the three WDL exceptions (the good faith exception, the implied contract exception, and the public policy exception). Panel B presents a subsample analysis partitioned by employee bargain power. Employee bargain power is measured by industry unionization, which is collected from the Union Membership and Coverage Database (UMCD). Panel C presents a subsample analysis based on business restructuring. A firm experiences restructuring if item *rcp* or *rca* from Computat is nonzero. Panel D presents OLS estimations controlling for the effect of executive turnover. Panel E presents OLS estimations for a sample excluding the misstatements announced during the 2007 financial crisis (2007-2009). Panel F presents OLS estimations controlling for the effect of stock price. Panel G presents OLS estimations controlling for the effect of internal control weakness disclosures. Panel H presents a matched sample analysis while the matched sample is created based on industry-, size-, and firm age-match. Industry fixed effects are based on the two-digit SIC code. See variable definitions in Appendix 1. *p*-values are based on standard errors that are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and

10% levels based on a one-sided test for the coefficients on *Misreporting*, *PostRestatement*, *ExeTurnover*Misreporting*, *ExeTurnover*PosRestatement*, *ICW*Misreporting*, *ICW*PosRestatement*, *LowStockPrc*Misreporting*, *LowStockPrc*PosRestatement*, *ResFirm*Misreporting*, and *ResFirm*PostRestatement* and a two-sided test for the other variables, respectively.

Table 6

Descriptive statistics for the sample of employee holding of employer stock

Variables	Mean	Std. Dev.	25%	Median	75%
<i>Employer_Stock_t</i>	6,641	12,903	0	1,148	7,195
<i>Misreporting_t</i>	0.372	0.484	0.000	0.000	1.000
<i>PostRestatement_t</i>	0.186	0.389	0.000	0.000	0.000
<i>Stock_Match_t</i>	0.023	0.150	0.000	0.000	0.000
<i>Dividend_to_Price_{t-1}</i>	0.013	0.018	0.000	0.000	0.021
<i>Price_to_Earnings_{t-1}</i>	13.797	50.458	-1.034	15.012	23.643
<i>SIZE_{t-1}</i>	6.841	1.909	5.462	6.830	8.139
<i>Leverage_{t-1}</i>	0.237	0.203	0.065	0.209	0.354
<i>MTB_{t-1}</i>	1.715	1.054	1.080	1.362	1.944
<i>ROA_{t-1}</i>	-0.008	0.169	-0.006	0.025	0.061
<i>R&D_{t-1}</i>	0.036	0.080	0.000	0.000	0.030
<i>Capex_{t-1}</i>	0.045	0.051	0.012	0.031	0.056
<i>SalesGrowth_{t-1}</i>	0.106	0.317	-0.037	0.064	0.178
<i>AGE_{t-1}</i>	24.543	16.924	11.000	19.000	37.000
<i>StockReturn_{t-1}</i>	0.072	0.526	-0.229	-0.027	0.240
<i>StockReturn_t</i>	0.032	0.486	-0.248	-0.042	0.204

This table presents descriptive statistics of the variables used in our analyses of employee holding of employer stock for a sample of 1,904 firm-year observations from 354 distinct misreporting firms that filed restatements between fiscal year 2004 and 2015. Continuous variables are winsorized at the 1st and 99th percentiles to reduce the influence of outliers. See variable definitions in Appendix 1.

Table 7

Financial misreporting and employee holding of employer stock

Variable	Dependent variable = $\text{Log}(\text{Employer_Stock}_t)$	
	Coef.	P-value
<i>Intercept</i>	-0.258	0.881
<i>Misreporting_t</i>	-0.362**	0.020
<i>PostRestatement_t</i>	-1.071***	0.000
<i>Stock_Match_t</i>	2.480***	0.000
<i>Dividend_to_Price_{t-1}</i>	-1.555	0.857
<i>Price_to_Earnings_{t-1}</i>	0.003**	0.025
<i>SIZE_{t-1}</i>	0.452***	0.000
<i>Leverage_{t-1}</i>	0.381	0.642
<i>MTB_{t-1}</i>	0.176	0.303
<i>ROA_{t-1}</i>	0.223	0.786
<i>R&D_{t-1}</i>	-4.826*	0.088
<i>Capex_{t-1}</i>	-0.766	0.842
<i>SalesGrowth_{t-1}</i>	-0.490**	0.033
$\text{Log}(\text{AGE}_{t-1})$	0.583*	0.081
<i>StockReturn_{t-1}</i>	0.043	0.786
<i>StockReturn_t</i>	0.503***	0.002
Industry FE		Yes
Year FE		Yes
N		1,904
R ²		47.21%

This table presents the OLS estimations of our primary model of employee holding of employer stock. Industry fixed effects are based on the two-digit SIC code. See variable definitions in Appendix 1. *p*-values are based on standard errors that are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels based on a one-sided test for the coefficients on *Misreporting* and *PostRestatement* and a two-sided test for the other variables, respectively.

Table 8

Financial misreporting and employee holding of employer stock—severity of misreporting

Variable	Dependent variable = $\text{Log}(\text{Employer_Stock}_t)$	
	Coef.	P-value
<i>Intercept</i>	-0.362	0.834
<i>Misreporting_t</i>	-0.343**	0.049
<i>PostRestatement_t</i>	-0.960***	0.000
<i>SevereRes_t</i>	0.225	0.561
<i>SevereRes_t*Misreporting_t</i>	-0.080	0.382
<i>SevereRes_t*PostRestatement_t</i>	-0.351*	0.098
Control variables		Yes
Industry FE		Yes
Year FE		Yes
N		1,904
R ²		47.24%

This table presents OLS estimations of employee holding of employer stock on a varying degree of severity of misreporting. Industry fixed effects are based on the two-digit SIC code. See variable definitions in Appendix 1. *p*-values are based on standard errors that are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels based on a one-sided test for the coefficients on *Misreporting*, *PostRestatement*, *SevereRes**Misreporting**, and *SevereRes**PostRestatement** and a two-sided test for the other variables, respectively.

Table 9

Financial misreporting and employee holding of employer stock—employee tenure

Variable	Dependent variable =Log(<i>Employer_Stock_{it}</i>)					
	Long Employee Tenure		Short Employee Tenure		Difference	P-value
	Coef.	P-value	Coef.	P-value		
<i>Intercept</i>	7.663***	0.009	-4.883	0.162		
<i>Misreporting_{it}</i>	-0.494**	0.015	-0.235	0.161	-0.259	0.218
<i>PostRestatement_{it}</i>	-1.151***	0.000	-0.739**	0.017	-0.412	0.191
Control variables	Yes		Yes			
Industry FE	Yes		Yes			
Year FE	Yes		Yes			
N	964		940			
R ²	52.57%		48.43%			

This table presents OLS estimations of employee holding of employer stock for two subsamples partitioned by employee tenure. A firm falls into the long (short) employee tenure subsample if firm age is above (equal or below) the median value. Industry fixed effects are based on the two-digit SIC code. See variable definitions in Appendix 1. *p*-values are based on standard errors that are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels based on a one-sided test for the coefficients on *Misreporting* and *PostRestatement* and a two-sided test for the other variables, respectively.

Table 10

Financial misreporting and employee holding of employer stock—robustness checks

Panel A: Excluding restatements announced during the 2007 financial crisis

Variable	Dependent variable = $\text{Log}(\text{Employer_Stock}_t)$	
	Coef.	P-value
<i>Intercept</i>	-0.383	0.827
<i>Misreporting_t</i>	-0.322**	0.044
<i>PostRestatement_t</i>	-0.888***	0.001
Control variables		Yes
Industry FE		Yes
Year FE		Yes
N		1,451
R ²		49.98%

Panel B: Interacting with stock return

Variable	Dependent variable = $\text{Log}(\text{Employer_Stock}_t)$	
	Coef.	P-value
<i>Intercept</i>	-0.537	0.759
<i>Misreporting_t</i>	-0.150	0.253
<i>PostRestatement_t</i>	-0.843***	0.003
<i>LowStockRet</i>	-0.818***	0.000
<i>LowStockRet*Misreporting_t</i>	0.440*	0.072
<i>LowStockRet*PostRestatement_t</i>	0.507	0.108
Control variables		Yes
Industry FE		Yes
Year FE		Yes
N		1,904
R ²		47.39%

Panel C: Internal control disclosure

Variable	Dependent variable = $\text{Log}(\text{Employer_Stock}_t)$	
	Coef.	P-value
<i>Intercept</i>	-0.302	0.865
<i>Misreporting_t</i>	-0.409**	0.014
<i>PostRestatement_t</i>	-1.078***	0.000
<i>ICW</i>	-0.583	0.373
<i>ICW*Misreporting_t</i>	0.888	0.107
<i>ICW*PostRestatement_t</i>	0.540	0.257
Control variables		Yes
Industry FE		Yes
Year FE		Yes

N	1,749
R ²	46.45%

Panel D: Match sample analysis

Variable	Dependent variable = Log(<i>Employer_Stock_t</i>)	
	Coef.	P-value
<i>Intercept</i>	0.383	0.775
<i>Misreporting_t</i>	-0.734***	0.000
<i>PostRestatement_t</i>	-0.913***	0.000
<i>ResFirm</i>	0.246	0.356
<i>ResFirm*Misreporting_t</i>	0.228	0.106
<i>ResFirm*PostRestatement_t</i>	-0.345*	0.042
Control variables	Yes	
Industry FE	Yes	
Year FE	Yes	
N	4,137	
R ²	46.74%	

Panel A presents OLS estimations of employee holding of employer stock for a sample of misreporting firms excluding the misstatements announced during the 2007 financial crisis (2007-2009). Panel B presents OLS estimations controlling for the effect of stock price. Panel C presents OLS estimations controlling for the effect of internal control weakness disclosures. Panel D presents a matched sample analysis while the matched sample is created based on industry-, size-, and firm age-match. Industry fixed effects are based on the two-digit SIC code. See variable definitions in Appendix 1. *p*-values are based on standard errors that are clustered at the firm level. ***, **, and * denote significance at the 1%, 5%, and 10% levels based on a one-sided test for the coefficients on *Misreporting*, *PostRestatement*, *ICW*Misreporting*, *ICW*PosRestatement*, *LowStockPrc*Misreporting*, *LowStockPrc*PosRestatement*, *ResFirm*Misreporting*, and *ResFirm*PostRestatement* and a two-sided test for the other variables, respectively.